


# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>P03010</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. <b>PCT/NO2004/000079</b>	International filing date ( <i>day/month/year</i> ) <b>22.03.2004</b>	Priority date ( <i>day/month/year</i> ) <b>27.03.2003</b>	
International Patent Classification (IPC) or national classification and IPC <b>G01V3/12</b>			
Applicant <b>NORSK HYDRO ASA et al.</b>			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  <b>20.09.2004</b>		Date of completion of this report  <b>01.07.2005</b>	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  <b>Juárez Colera, M</b>  Telephone No. +49 89 2399-2482	



ATTACHMENT "F"

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/NO2004/000079

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-25 as published

**Claims, Numbers**

1-17 as published

**Drawings, Sheets**

1/18-18/18 as published

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
  - ☒ claims Nos. 17
- because:
- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
  - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
  - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
  - ☒ no international search report has been established for the said claims Nos. 17
  - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
    - the written form ☐ has not been furnished
    - ☐ does not comply with the standard
    - the computer readable form ☐ has not been furnished
    - ☐ does not comply with the standard
  - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
  - ☐ See separate sheet for further details

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-16
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

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**Re Item I**

**Basis of the report**

The present report is based on claims 1-16, since no search report has been established on claim 17

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

No report is therefore established concerning the subject matter of claim 17

**Re Item VIII**

**Certain observations on the international application**

- 1 The application does not meet the requirements of Article 6 PCT, because claims 1-16 are not clear. The reasons therefor are the following:
  - 1.1 Although claims 1 and 16 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.
  - 1.2 The relative term "high", "near(er)" "steeply" and "strong" used in claims 1, 2, 4, 5, 8, 10, 13 and 15 have no well-recognised meaning and leave the reader in doubt as to the meaning of the features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear.
  - 1.3 The third and fourth paragraphs of claim 1 (l. 10-19) are formulated in such a way that the claim seeks to define the invention by reference to a feature of the obtained product, i.e. the transmitted electromagnetic waves. The properties of the electromagnetic waves can only be claimed by the method steps. This formulation

results, therefore, in a lack of clarity. See PCT Guidelines 5.27.

- 1.4 The use of optional features in claims 2, 13 and 15 (the corresponding features introduced by terms like "e.g." and "possibly") introduces ambiguity in the interpretation of the corresponding claims therefore resulting in a lack of clarity of those claims.
- 1.5 The expression "characterised in that" as used in claims 2-15 introduces unclarity in the interpretation of the claims since it is not clear whether they contain all the features of claim 1 or only those claimed in the preamble of it.
- 1.6 The following reference signs used in claims 1-9, 13 and 15 are not found in the description and/or drawings: S1, S2, R3, 70U, 70L, 50 and A2.  
Similarly the reference signs: 5, 50, 2o, P<sub>⊥</sub>, P<sub>||</sub> and A2 referred to in pages 11-13, 15, 24 and 25 of the description do not appear in the drawings.
- 1.7 In claim 16, the terms lower-resistivity and higher-resistivity are used referring respectively to the reservoir and to the overburden formation, contrary to what is stated overall in the description and claims.

#### **Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

#### **1 Prior art**

Reference is made to the following documents:

D1: US 6 696 839 B2

D2: WO 00/00849

The document D1 was not cited in the international search report. A copy of the document is appended hereto.

#### **2 Article 33 (1) and (2) PCT (Novelty)**

- 2.1 The document D1 is regarded as the closest prior art to the subject-matter of claims 1 and 16, and discloses (abstract; col.2, l. 7-34; col. 3, l. 3-48; col.4, l. 35-58; col. 5, l. 15-31 and Fig. 1): a method for monitoring a reservoir formation with higher resistivity than the overburden formation by transmitting an electromagnetic signal to propagate as a guided electromagnetic signal inside of the higher-resistivity formation and detecting the upwardly refracted signal with an array of sensors along the seafloor.
- 2.2 The subject-matter of claim 1 therefore differs from this known method in that the source signal is transmitted such that it propagates from the sea-floor as a guided wave along a conductive string.
- 2.3 The difference between the method of D1 and the subject matter of claim 16 resides in the arrangement of the transmitter into the borehole with respect to the reservoir.
- 2.4 The subject matter of claims 1 and 16 is therefore new.
- 2.5 Claims 2-15 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty.

### **3 Article 33 (1) and (3) PCT (Inventive Step)**

- 3.1 The present application, the above-mentioned lack of clarity notwithstanding, does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1-16 does not involve an inventive step in the sense of Article 33(3) PCT. The reasons are as follows:
- 3.2 Taking into account the explanations above (§2.1 and 2.2), the problem to be solved by the present invention may be regarded as avoiding introducing the transmitter into the well and however achieving a strong enough signal to be guided to the higher-resistivity formation.
- 3.3 The above-mentioned feature (§ 2.2), which is the solution proposed in claim 1 of the present application is described in document D2 (cf. abstract; p.3, l. 8-37 and Fig.1) as providing the same advantages as in the present application. The skilled person

would therefore regard it as a normal option to include this feature in the method described in document D1 in order to solve the problem posed.

- 3.4 On the other hand, the above-mentioned difference between the method of D1 and the subject matter of claim 16 (§2.3) is regarded as a slight constructional change in the apparatus disclosed in D1 which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of this claim also lacks an inventive step.
- 3.5 Dependent claims 2-15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.

**4 Article 33 (1) and (4) PCT (Industrial Applicability)**

The subject matter of claims 1-16 is susceptible of industrial application.